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NEW AND INTERESTING DYTISCIDAE (COLEOPTERA) FROM FIJI

By J. Balfour-Browne, M.A., F.Z.S., F.R.E.S.

Dept. of Entomology, British Museum (Natural History).

Laccophilus seminiger Fauvel.

Fauvel, 1883, *Rev. d'Ent.* **3** : 337.

Ovalis, niger, capite, pronoto angulis anticis elytrisque apicibus flavo-testaceis; antennis, prosterno, pedibusque quattuor anticis flavis; metasterno, pedibusque posticis testaceo-piceis. Processu prosternali longissime, anguste, et longitudinaliter carinato. Sine lima coxarum posticarum.

Head flavo-testaceous, male quite shining, female less shining, very finely microreticulate, the meshes quite regularly rounded, more impressed in the female than in the male. *Antennae* flavous, the apical segment slightly infuscate apically. *Pronotum* black, the anterior angles widely flavo-testaceous but not extending inwards from the inner edge of the eye, nor posteriorly much behind the middle of the lateral margin; surface microreticulate as on the head. *Elytra* black, the apices flavo-testaceous, microreticulate as on the head and pronotum, without trace of larger areoles; the three primary series of punctures fine and irregular; epipleurae of the male normally regularly attenuate from base to shortly before the apex; of the female of equal width from base to the level of the basal abdominal segment, then distinctly explanate and concave beneath and sharply regularly attenuate from the level of the hind angles of the third segment to just before the apex, the explanation being remarkably distinct in dorsal aspect. *Venter*: prosternum flavous, process very long, longitudinally carinate and narrow, laterally compressed; metacoxae and abdomen black, metasternum testaceo-piceous; sixth ventrite of the male deeply asymmetrically emarginate on the posterior edge, the middle of the emargination produced into a short rounded tooth; " lamellar–process " at the base of the sixth ventrite of the left side erect, terminally rounded, of the right side adpressed to the surface and terminally rounded; sixth ventrite of the female trilobate in the middle of the hind margin, the median lobe broader and terminally rounded, the lateral lobes narrower and acutely pointed, externally to the lateral lobes deeply symmetrically emarginate.

Long.: 4·34–4·67 mm. Lat.: 2·37–2·56 mm.

Fiji: Viti Levu, Namaka, 8.xii.1943, " Pool," 1 ♂, 2 ♀.[1]

This species was originally described on a unique male from New Caledonia. I have published some remarks (1939, *Ann. Mag. nat. Hist.* (11) **3** : 99, figs. 1a, 2a) and a figure of the aedeagus of a further single male from Australia: Arnhemland, Adelaide River (*J. J. Walker* leg.). The three specimens before me, comprising 1 male and 2 females, appear to justify a fresh description and comparison of the sexes, the females being the first seen. The explanate epipleurae are an unexpected feature of the female among Old World species and readily separate the species from all others of Sharp's Group 6. The occurrence of this species in Fiji further accentuates the Northern Australian or " Papuasian " affinities of the aquatic coleoptera of the islands which I

[1] All collections are due to R. A. Lever, Entomologist, Dept. of Agriculture, Suva.

have discussed in a paper on the Aquatic Coleoptera of Oceania (Berenice P. Bishop Museum Occ. Pap., *in press*).

Fauvel's types have never been available for examination and in these circumstances the identity of the species cannot be absolutely certain, but I have very little doubt of the correctness of the ascription and accordingly I am selecting one of the two females above described as being a standard specimen of that sex in the sense of, but not designating as, a " neoallotype."

Bidessus leveri sp. n.

Elongato-ovalis, apicaliter attenuatus; flavus, elytris fusco-flavis; mas politus et nitidissimus, femina pinguicula; caput sine stria post ocula transversa; plica thoraco-elytrorum recte; elytris confertim punctatis versus suturam usque ad plicam, inter plica margineque regulariter tenuioribus punctatis; omnino sine stria suturali.

Head flavous, anteriorly short and widely rounded, finely and sparingly punctulate; antero-laterally with a shallow punctured depression on each side but without trace of a feebly raised transverse ridge or pair of tubercles antero-medially; eye facets not delimited by a finely impressed line in the male, distinctly delimited in the female. *Antennae* of the male longer, 5th to 10th segments evidently moniliform, longer than broad, of the female shorter, 5th to 10th segments clearly as broad as long and shorter than in the male, dorso-ventrally flattened. *Pronotum* transverse, sides straight basally, weakly regularly convergent anteriorly, posterior angles rectangular; laterally distinctly margined at the base, the margin continuing to the anterior angles but progressively finer and less distinct; on either side of the produced scutellar area with a straight plica attaining quite to the middle; very finely and very sparingly punctured. *Elytra* largely fusco-flavous, the base externally to the basal plicae, the side margins widely and the apex flavous; the basal plicae twice as long as the thoracic plicae, quite straight; near the suture strongly and distinctly punctured, externally more finely and sparingly punctured, the surface between highly polished in the male, with a greasy sheen in the female but without visible sculpture even under the highest magnifications; the demarcation between the stronger punctures near the suture and the finer punctures near the margin is quite sharp and is limited by a continuation backwards of the basal plicae. *Venter*: rufo-fuscous, the prosternum flavous; the prosternal process long, with distinct margins and a median longitudinal shallow convex ridge; meta-coxal processes apparently abruptly truncate due to an abrupt small declivity, the coxal articulation not extending mesad of the coxal lines. *Legs* flavous, the three basal segments of the anterior and intermediate tarsi of the male evidently wider than in the female and the claws longer and more curved.

Long.: 2·10–2·26 mm. Lat.: 1·05–1·11 mm.

Fiji: Viti Levu, Namaka, 8.xii.1943, "Swamp," 3 ♂, 1 ♀. Nadi, 10.vi.1943, 1 ♀. Same locality, 21.viii.1943, 1 ♀. Navua, 17.xi.1943, 2 ♂. Delainavesi, 2.xii.1943, 1 ♀.

This new species might be mistaken for *B. compactus* (Clark) from Australia or *B. neoguineensis* Rég. from New Guinea (the latter appears to be a subspecies of the former) and it is extremely closely related thereto by the structure of the parameres of the aedeagus, absence of the transverse stria of the vertex, straight thoraco-elytral plicae, absence of sutural stria of the elytra and general form.

It may be distinguished from *compactus* by the shorter head, much more widely rounded in front, the entire absence of the feebly raised transverse ridge near the anterior margin of the head, which is quite conspicuous in the compared species; the thoracic plicae attain the middle of the pronotum and the elytral

plicae are conspicuously longer; the elytral punctation is stronger and the female has a greasy sheen; the prosternal process is narrower, the pro- and meso-tarsi of the male are broader, the male antennae longer and more slender and the median lobe of the aedeagus is regularly attenuate from the base to the acutely pointed apex whereas in *compactus* it is parallel-sided in the apical two-thirds, then abruptly narrowed and again parallel-sided to just before the apex where it is again abruptly narrowed to the very short, parallel-sided rounded apical piece. The metacoxal processes of *compactus* are gently declivous at the apex, not abruptly so as in *leveri*, so that the apex does not appear transversely truncate as in the new species.

Bidessus fijiensis sp. n.

Elongato-ovalis, postice regulariter curvatus attenuatus; flavo-testaceus, fronte et macula irregulare indistincteque in elytris fusco; capite stria transverse tenue ad verticem; pronoto utrinque plica longe S-*sinuata usque ad medium attingente, in elytris continuata plica recte; sine stria suturali; antennis distincte incrassatis, segmentis quinto sextoque dilatatis et dorso-ventraliter compressis.*

Head flavous, the frons fuscous, the vertex smoky, with a very fine transverse vertical furrow, the surface finely and moderately densely punctulate; the anterior part of the fronto-clypeus on either side very shallowly impressed. *Antennae* long, the fifth and sixth segments markedly incrassate and dorso-ventrally flattened, the eleventh segment long, about as long as the three preceding segments taken together. *Pronotum* transverse, the sides weakly rounded and finely margined, widest about the middle; unicolorous, flavous, very finely and sparingly punctulate, the surface with a greasy sheen; on either side at base with a sinuous plica quite attaining to the middle. *Elytra* ovate, the sides weakly rounded, fuscous, behind the shoulder widely, the apex narrowly and two vague spots on each side behind the base smoky flavous; the surface finely, moderately closely and regularly punctulate, the inner systematic series of larger punctures moderately distinct. *Venter*: black, abdomen fusco-flavous. *Legs* flavous or smoky flavous. Male unknown.

Long.: 2·89 mm. Lat.: 1·39 mm.

Fiji: Viti Levu, Namaka, 8.xii.1943. Unique ♀.

This new species appears to be most nearly related to the New Zealand *B. huttoni* Sharp in general structure and appearance. The remarkably strongly incrassate antennae exceed anything I have hitherto seen in the genus and readily distinguish the species from all other Oceanian Bidessini. The description of *H. dorsoplagiatus* Fairm. (1881, *Ann. Soc. ent. France* (6) **1**: 249 *nec H. dorsoplagiatus* Fairm. 1880) (= *B. fairmairei* Van den Brand.) from "Iles Viti" might possibly be drawn from a male of this species but there are a number of discrepancies which appear to go beyond the differences of sex and accordingly, in the existing impossibility of examining Fairmaire's type, I have treated the present insect as undescribed.

Rantus vitiensis sp. n.

Elongato-ovalis, sat convexus, nitidus, subtus niger; antennis pedibusque rufo-nigris; supra caput nigrum vel nigropiceum, postice transverse rufo-bi-maculatum, labro rufo; prothorace nigro-piceo, ad latera vage rufescente; elytris rufo-testaceis, cerberrime nigro-irroratis, seriebus tribus longitudinalibus punctorum magnorum; tarsis posticis longis, articulum basale interne prope marginem inferiorem punctis serialibus setiferis, unguiculo interno quam externo haud duplo longiore. Mas, segmentis tribus basalibus tarsorum anteriorum intermediorumque dilatatis, unguiculis simplicibus, aequalibus.

Long.: 10·0–11·0 mm. Lat.: 5·0–5·5 mm.

Fiji: Viti Levu, Nadarivatu, 24.vi.1941, 2 ♂, 1 ♀; same locality, 25.vi. 1941, 1 ♂; same locality, 14.x.1942, 1 ♂, 2 ♀; same locality, 17.i.1943, 1 ♂, "stream."

This new species appears to be most nearly related to *R. pacificus* (Boisd.) from the Sandwich Islands and resembles it in appearance more than the other species found in Oceania and Melanesia. It may be distinguished by the much more shining aspect owing to the less impressed meshes of the elytral reticulation and the virtual absence of the fine punctation, which is of extreme fineness and only distinguishable under a high magnification in the area between the suture and the discal row of systematic punctures to about half the length of the elytron; the much finer and less impressed thoracic reticulation; the greater and more extensive thoracic infuscation; the much larger punctures of the systematic series of the elytra, which appear to be somewhat aggregated in comparison with those of *pacificus*; the posterior (inner) face of the posterior tibiae possesses a distinctly unilinear series of fine setiferous punctures in addition to the coarse punctures bearing flattened, apically bifid, spines near the dorsal face, whereas in *pacificus* the fine setiferous punctures are very numerous, covering most of the middle of the posterior face and not linearly disposed; lastly, by the presence on the lower, inner face of the basal segment of the hind tarsi of a complete series of setiferous punctures which almost delimit a third face to the segment, a feature not found in *pacificus* and not so completely developed in any other species of the genus known to me, rarely present to the extent of a few setiferous punctures to the number of two or three in a few species, e.g., *marmoratus* (Perr.) and *sexualis* (Zimm.).

A NEW SPECIES OF *BOTHRIOMYRMEX* EMERY (HYM. FORMICIDAE), AND SOME NOTES ON THE GENUS

By Horace Donisthorpe, F.Z.S., F.R.E.S.

Bothriomyrmex salsurae sp. n.

☿. Dirty pale yellowish-brown, legs and antennae lighter, tibiae, tarsi, scapes and apex of antennae pale yellow, teeth of mandibles and eyes black, shining, clothed with fine greyish pubescence, a few short outstanding hairs are present on the clypeus, mandibles, and gaster.

Head slightly longer than broad, slightly narrower in front than behind, sides almost straight, posterior angles rounded, posterior border excised; *mandibles* triangular, punctured, masticatory border armed with three sharp teeth at apex, the first and third (counting the apical one as the third) longer than the second, the apical one being the longest, a small tooth or dentule is present just before the first tooth and a few dentules are indicated towards and at base; *clypeus* large, convex, anterior border rounded; *frontal area* not distinctly defined; *eyes* rather small, round, flat, situated at about the centre of the sides of the head, near to but not touching the lateral borders when viewed from above; *antennae* fairly long, *scape* only extending slightly beyond the posterior border of the head, *funiculus* with first and second joints evidently longer than broad, the first being longer than the second, the third to the tenth about as broad as long, last joint about as long as the two preceding taken together. *Thorax*, somewhat thick, broader in front than behind, con-

tracted behind pronotum; *pronotum* large, transverse, convex, sides and anterior angles rounded; *prosternum* forming a neck anteriorly; *mesonotum* circular, about as long as broad; *epinotum* longer than broad, narrowed behind, sloping to base, without a distinct angle between dorsal surface and declivity. *Scale of petiole* not very high, longer than broad, narrowed to base, apex bluntly pointed and showing a tendency to being slightly excised; *gaster* short oval, broadest at base, rounded anteriorly, narrowed to apex. *Legs* moderately long. *Long.* 2·5–2·7 mm.

♀. Black, shining, legs, antennae, and mandibles brown, apex of antennae and tarsi pale brownish-yellow, clothed rather thickly with yellowish-white pubescence; whiter and thicker on cheeks, and some short yellow outstanding hairs, especially on mandibles and gaster.

Head slightly longer than broad, narrowed anteriorly; sides behind eyes convex and rounded, posterior angles rounded, posterior border distinctly emarginate; *mandibles* massive, triangular, punctured, armed with one rather long curved tooth at apex and a small tooth just before it; the rest of the masticatory border faintly serrate; *clypeus* large, transverse, rather flat, anterior border rounded, *frontal area* not indicated; *eyes* large, round oval, very slightly convex, situated on each side of the head before the centre, touching the lateral borders when seen from above; *ocelli* very small, situated on top of posterior part of head near posterior border; *antennae* long, *scape* extending a little beyond the posterior border of the head, *funiculus* with first two joints distinctly longer than broad, the 1st joint narrower but if anything slightly longer than the second, 3rd joint about as long as broad, 4th–10th slightly longer than broad, last joint very slightly longer than the two preceding taken together. *Thorax* large, massive, somewhat flat above, broadest across anterior angles, narrowed to base; *pronotum*, transverse, narrow, anterior border slightly raised, *prosternum* forming a neck; *mesonotum* large, transverse, flat, rounded anteriorly and posteriorly; *praescutellum* indistinct; *scutellum* large, transverse, flat, narrowed to base; *epinotum* about as long as broad, sides straight, dorsal surface convex, shorter than the declivity, declivity rather abrupt, but angle between it and dorsal surface not marked. *Scale of petiole* hexagonal, not large, anterior border emarginate, sides with shortly pointed angles, space between anterior border and angles excised, sides behind angles straight, narrowed to base. *Gaster* short, round oval, narrowed to apex. *Legs* fairly long. *Wings* iridescent, *pterostigma* and *veins* pale brown, one cubital cell, one discoidal cell, and rather narrow, long, not quite closed radial cell present. *Long.* 3·7–4 mm.

♂. Black, shining, mandibles, legs and antennae pale brown, tarsi and apex of antennae lighter, clothed with fine greyish pubescence and a few short yellow outstanding hairs.

Head transverse, narrowed before eyes, sides behind eyes rounded, posterior border truncate; *mandibles* long, narrow, crossed at apex when closed, armed with a sharp narrow tooth at apex, and the indication of a smaller tooth preceding it; *clypeus* transverse, convex, anterior border round and slightly projecting in centre, slightly sinuate on each side; *vertex* of head slightly concave; *eyes* large, oval, prominent, situated on each side of the head in front, close to posterior border of clypeus, but with an evident space between; *ocelli* fairly large, prominent, larger in proportion than those of the female, situated on top of posterior part of head which is slightly raised; *antennae* moderately long, narrow, *scape* extending as far as the median ocellus, all the joints of the *funiculus* longer than broad, first joint shorter than the rest, last joint not quite as long as the two preceding taken together. *Thorax* longer than broad, convex, narrowed in front and behind, broadest across middle of mesonotum; *pronotum* transverse, narrow anteriorly, sides extending round mesonotum to insertion of fore-wing; *prosternum* forming a neck; *mesonotum* transverse, convex, rounded in front and at sides; *praescutellum* not indicated; *scutellum* convex, narrowed to base, transverse anteriorly; *metanotum* very narrow, transverse, lower than mesonotum and epinotum; *epinotum* about as broad as long, narrowed slightly to base, dorsal surface convex, about as long as declivity, declivity slightly concave, angle

between the two gradual and not marked. *Scale of petiole* small, not high, about as broad as long, rounded above and at sides. *Gaster* long oval, narrowed in front and behind; *cerci* present. *Stipites* thin and curved with a hook inside half-way down; *volsellae* thin, curved, very sharp, the point bending slightly outwards; *sagittae* close together, curved and sharply pointed at apex. *Legs* fairly long. *Wings* as in the ♀ but smaller in proportion. *Long.* 2·5 mm.

Described from 22 workers, 9 winged females and 5 males taken by Mr. W. Pickles at Soud Arras in Algeria. Type, and male and female types, in the British Museum (N.H.). Mr. Pickles writes that the ants were taken on 11 December 1943, in a corner of the practically deserted superstructure of a nest of *Messor aegyptiacus* subsp. *canaliculatus* Donis. A few *Messor* crawled about, when the nest was disturbed, and tapped the smaller ants, but seemed indifferent to their presence.

The genus *Bothriomyrmex* was erected by Emery in 1869 for the reception of a species (♂ and ♀) which he had captured in the neighbourhood of Naples, and named *Bothriomyrmex costae*. Roger, however, in 1863, had described the worker of a species from Montpellier and Andalusia under the name of *Tapinoma meridionalis*, and Mayr in 1870 pointed out that this was the ☿ of Emery's *costae*. Consequently the name of the species is *Bothriomyrmex meridionalis* (Roger). Forel in 1894 described another species *B. atalantis* (☿) from North Africa.

Santschi, in 1911, described a new species, *B. decapitans*, from Kairouan, Tunis, which he had previously recorded in 1906 as *B. atalantis* Forel.

In 1915 Wheeler described a species under the name of *B. dimmocki* from Mt. Tom, near Springfield, Massachusetts, but according to Emery (1925) this is not a *Bothriomyrmex* at all, but a species of *Tapinoma*. He further states that the genus *Bothriomyrmex* is exclusively palaearctic and Indo-Australian.

In 1920 Santschi enumerated 10 species of *Bothriomyrmex*, describing seven new ones, of which he gave figures. As all the European and North African species possess 4-jointed maxillary palpi, whereas those from India and Australia possess only 2-jointed ones, he gave the subgeneric name *Chronoxenus* to the latter; but he failed to cite a type. I propose *Bothriomyrmex myops* Forel, 1895, ☿♀, from Sikkim, as type by present designation.

Emery, in 1925, in a paper on the European and oriental species of the genus *Bothriomyrmex*, when referring to Santschi's 1920 monograph of the genus, suggested that the European species were not known to that authority except from specimens from collections, and often in a bad state, chiefly represented by workers, which are very polymorphic and do not offer such distinctive characters as the females and males. The male genitalia, however, exhibit considerable variation. He then gave a list, with very precise descriptions and figures of all the European and Asiatic species, subspecies, and varieties (with their synonymy), which separate naturally into an occidental group (hispano-provençal) and an oriental group (Crimea, Caucasus ?, Syria, Central Asia).

It is usually the case that the genera of parasitic ants are descendants from the genera of their hosts, but Emery considered that *Bothriomyrmex* is descended from *Iridomyrmex* and not from *Tapinoma*. He pointed out that the gizzard and the male genitalia resemble more closely those of the former than the latter. Furthermore, *B. scissor* Crawley, was taken by J. Clark in a nest of *Iridomyrmex innocens* Forel, in Australia. He thought that the first species of *Bothriomyrmex* was parasitic on species of *Iridomyrmex*. At the period when *Iridomyrmex* disappeared from the palaearctic fauna and was replaced by

Tapinoma (the former occur in the Baltic Amber, but the latter do not), *Bothriomyrmex* changed hosts, and became parasites on the *Tapinoma erraticum* group. Forel (1874) was the first to discover a mixed nest of *Bothriomyrmex–Tapinoma*. On 23 June 1871 he found the two species *Bothriomyrmex meridionalis* Forel (1894) *nec* Roger (1863) = *B. corsicus* Sants. subsp. *gallicus* Emery (1925), and *Tapinoma erraticum* Latr. living together under a stone " au dessus de Stresa (Iles Borromées) ". He explained this as having been caused by an alliance of a queen of each species. The temporary social parasitic habits of certain ants had, of course, not been discovered at that date.

Santschi was the first to make known the colony-founding habits of this genus. The method employed by the Dolichoderine parasite *Bothriomyrmex decapitans*, which was first observed by Santschi at Kairouan in Tunis in January and February 1906, is as follows : The young queen after the marriage flight wanders about in search of a nest of *Tapinoma nigerrimum*, where she is seized and dragged into the nest by the workers. She is slightly attacked in the nest, but climbs on to the brood, or on the back of the queen, when she seems to be safe from attack. While on the back of the queen, she kills her by cutting off her head. After the death of the *Tapinoma* queen the intruder is accepted in her place. Eventually the host workers die off, and a pure *Bothriomyrmex* colony remains. The matter is facilitated by the fact that the female *Bothriomyrmex* possesses the shape, colour, and smell of the larger *Tapinoma* workers. This odour is most evident in the young queens, and Santschi has called it olfactory mimicry.

It seems fairly clear that the palaearctic species of *Bothriomyrmex* are temporary social parasites on forms of *Tapinoma erraticum* and *T. nigerrimum*, and those of the Indo-Australian fauna on species of *Iridomyrmex*.

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DESCRIPTIONS OF NEW STAPHYLINIDAE (COLEOPTERA) [1]

By Malcolm Cameron, M.B., R.N., F.R.E.S.

Atheta (Aloconota) inaequalis sp. n.

Moderately shining, black, the elytra yellow. Antennae black, the first two segments yellowish-brown. Legs yellow. Length 4 mm.

In the build of the head and thorax much resembling *luteipes* Er. but with longer, uneven elytra, much more sparingly punctured abdomen etc. ♂: head suborbicular, narrower than the thorax, the eyes large, about as long as the post-ocular region; disc with three superficial impressions, a pair behind the insertion of the antennae and another immediately behind them in the middle; punctures very small, flat and superficial, moderately close, in character much like those of *luteipes* but not so fine; ground sculpture distinct, coriaceous. Antennae constructed much as in that species but longer and stouter, 2nd and 3rd segments of equal length, 4th a little longer than broad, 5th as long as broad, 6th to 10th transverse, the penultimate about a half broader than long. Thorax very slightly transverse (4·2 : 4), the sides gently rounded in front, straighter and a little more retracted behind, the posterior angles rounded, the puncturation about as close but finer than on the head, the ground sculpture similar. Elytra longer (5·5 : 4) and broader than the thorax, slightly transverse (6·5 : 5·5), uneven, impressed on each side of the suture and more extensively on the disc; posterior angles not emarginate; sculpture fine, close and granular, the ground sculpture coriaceous. Abdomen practically parallel, very finely and very sparingly punctured throughout, the ground sculpture very fine and transverse: 7th tergite along the middle of the posterior half with a stout keel, 8th with rounded posterior margin in the middle with a pair of small obtuse teeth.

Darjeeling: Ghum district. Unique. In my collection.

Atheta (Paraloconota) muscicola var. fuscata v. n.

Differs from the type form in the first two or three segments of the antennae and the femora and tibiae being pitchy.

Kashmir: Khelanmarg, altitude 10,000 feet. My collection.

Atheta (Metaxya) medialis sp. n.

Moderately shining: head black; thorax reddish-brown; elytra brownish-yellow; abdomen black, the first visible tergite reddish. Antennae black, the first two segments yellowish-red. Legs reddish-yellow. Length 2·75 mm.

Very near *connectens* Cam., similar in colour and build but a little smaller and narrower, the antennae similarly constructed, the head and thorax much more finely punctured. Head large, subquadrate, nearly as broad as the thorax, the eyes large, the disc broadly impressed and with fine median sulcus, extremely finely and closely punctured and with fine coriaceous ground sculpture. Antennae slender, all the segments longer than broad, decreasing in length, the 10th about a half longer than broad, the 11th as long as the 9th and 10th together. Thorax transverse (3·5 : 3), the sides straight behind and distinctly

[1] Continued from 1944, *Proc. R. ent. Soc. Lond.* (B) **13** : 52.

retracted, in the middle of the posterior half narrowly impressed, the puncturation close and finer than on the head, the ground sculpture similar. Elytra broader and longer (4 : 3) than the thorax, very finely and closely punctured, very finely coriaceous. Abdomen parallel, closely and much less finely punctured than the elytra, sparingly on the 5th visible tergite, the ground sculpture fine and transverse, pubescence yellow rather long, that of the fore parts finer and shorter.

DEHRA DUN : Song River. Unique. My collection.

Atheta (Metaxya) congruens sp. n.

Very near *thinoecioides* Cam., of the same build, colour and lustre but smaller and narrower, the antennae a little shorter but similarly constructed, head and thorax with fewer and less distinct punctures, the latter more broadly and more superficially impressed in the middle, the abdomen more finely and less closely punctured. Length 2·1 mm.

♂ : 8th tergite truncate ; 6th sternite a little produced but not narrowed, broadly rounded behind.

♀ : 8th tergite with small arcuate emargination in the middle of the posterior margin.

SIWALIKS : Lachiwala, Mothronwala, River Song, Saiya. In stream shingle. Type in my collection.

Atheta (Ousipalia) pseudocaesula sp. n.

Size, build and colour of *caesula* Er., the antennae similarly constructed, but more shining, the head with narrow impression on the disc, the puncturation very fine but more evident, the ground sculpture less distinct; thorax much less finely punctured. Elytra as long as the thorax, rather more finely punctured than in *caesula*, the abdomen scarcely differing in the two species.

KASHMIR : Gulmarg. A single specimen in my collection.

Atheta (s.str.) **championi** sp. n.

Size, build, colour and lustre of *dilutipennis* Motsch. but with the antennae entirely reddish-yellow and the puncturation of the thorax closer and distinctly rougher and less fine, elsewhere scarcely different. The antennae except for the colour, similar. Length 2 mm.

♂ : unknown.

KUMAON : Haldwani district (*Champion*). Unique. British Museum (N.H.).

Atheta (Dimetrota) deprava sp. n.

Colour of *sublaevana* Cam., the antennae shorter but similarly constructed, with the head, thorax and elytra rather closely and distinctly roughly punctured, much less finely than in *sublaevana*, the thorax shorter and so more transverse, the abdomen much more closely punctured and pubescent throughout, the tibial setae much shorter. Length 2·75 mm.

KASHMIR : Gulmarg. Unique. My collection.

Atheta (Datomicra) pauxilla sp. n.

Rather shining, head black : thorax dark reddish-brown, elytra brownish-yellow; abdomen black, the first two and the last segments brownish-yellow. Antennae reddish; the first two segments and legs reddish-yellow. Length 1·5 mm.

Size and build of *sordidula* Er. but much more shining, differently coloured and not roughly punctured. Head suborbicular, narrower than the thorax, the eye about as long as the post-ocular region, the puncturation extremely fine, rather sparing, the ground sculpture rather feeble. Antennae as in *sordidula* except that the last segment is shorter. Thorax transverse (2·5 : 2), the puncturation closer and not so fine as on the head, the ground sculpture weak. Elytra broader and a little longer (2·5 : 2) than the thorax, transverse (3·4 : 2·5), very finely and much more closely punctured; ground sculpture absent. Abdomen very finely, moderately closely punctured on the first two segments, much more sparingly on the posterior, the ground sculpture fine and transverse.

♂ : 8th tergite with rounded and feebly crenulate posterior margin : 6th sternite a little produced, narrowed and rounded.

Dehra Dun : Chakrata district. Bodyar, altitude 8300 feet. In dung. Type in my collection.

Atheta (Datomicra) pseudosordidula sp. n.

Size, colour and lustre of *pauxilla* Cam., differs in the much less fine, closer and rougher puncturation of the head and thorax, that of the elytra and abdomen, however, scarcely differing from that species but the former are shorter only as long as the thorax, which is feebly sulcate along the middle. The antennae are dark reddish-brown in colour and constructed as in *sordidula* Er., the last segment being oblong and longer than the two preceding together.

No secondary sexual characters visible.

Dehra Dun : Lachiwala, Keyarkuli. Type in my collection.

Atheta (Acrotona) ghanii sp. n.

Shining; head and abdomen black, the last tergite yellow; thorax bright reddish-yellow; elytra yellow with the scutellary region triangularly infuscate. Antennae black, the first two segments and legs reddish-yellow. Length 2·5 mm.

Size and build of *fungi* Gr. but differing in the colour, the penultimate segments of the antennae slightly more transverse, the sculpture of head, thorax and abdomen scarcely differs from that species, but that of the elytra is rather finer, the ground sculpture is similar.

Punjab : Lyallpur, 13.xii.39 (*M. A. Ghani*). Under dead leaves. Eight specimens. Type in the British Museum (N.H.).

Atheta (Acrotona) orphanella sp. n.

Rather shining, black, the elytra dark brown, the posterior margins of the last two tergites obscurely rufescent. Antennae black, the first two segments yellowish-brown. Legs reddish-yellow. Length 2 mm.

In colour and lustre much like *orphana* Er. but much narrower, the antennae much thinner, the puncturation of the head and especially the thorax much rougher, the abdomen less closely punctured. Head rather broad but narrower than the thorax, finely, moderately closely asperately punctured; ground sculpture feeble. Antennae slender, the 3rd segment a little shorter than the 2nd, 4th about as long as broad, 5th to 10th transverse, increasing in width, the penultimate twice as broad as long, 11th as long as the 9th and 10th together. Thorax transverse (2·75 : 2), the sides evenly rounded, a little retracted in front, the sculpture fine, close and granular, the ground sculpture scarcely visible. Elytra longer (3 : 2) and broader than the thorax, not emarginate postero-externally, with fine close asperate puncturation much like that of *orphana* and with fine ground sculpture. Abdomen nar-

rowed towards apex, finely and much less closely punctured than in that species; ground sculpture fine and transverse. Middle and posterior tibiae without setae.

KASHMIR: Gulmarg. Unique. My collection.

Atheta (Acrotona) rufolucida sp. n.

Shining yellowish-red, the head darker, the abdomen with the 3rd and 4th visible tergites slightly infuscate. Antennae and legs reddish-yellow. Length 1·75 mm.

In size and build scarcely differing from *orphana* Er. but more shining, differently coloured, more sparingly punctured and with shorter antennae. Head very finely, sparingly punctured. Antennae a little shorter than in *orphana*, the intermediate segments shorter, otherwise similar. Thorax with fine, moderately close asperate punctures, transverse (3·5 : 2·5), the sides evenly rounded. Elytra longer (3 : 2·5) and broader than the thorax, more deeply emarginate postero-externally than in *orphana*, the punctures less fine and closer than on the thorax. Abdomen with the first four visible tergites each with three transverse rows of fine punctures, the last two sparingly and irregularly punctured. The whole insect without ground sculpture, the pubescence fine and yellow, on the fore parts semi-erect.

Nilgiri Hills (*H. L. Andrewes*). Type in my collection.

Thamiaraea adjacens sp. n.

Very near ♀ *dimorpha* Cam. and with similar antennae and colour except the thorax, which is reddish-brown, the fore parts, however, are as closely but much less finely and distinctly roughly punctured, the abdomen more closely punctured; the ground sculpture of the fore parts is not quite so marked whilst that of the abdomen is distinct, whereas in *dimorpha* it is scarcely visible. Length 4 mm.

♂: unknown.

DARJEELING: Ghum district. Tiger Hill, alt. 8500–10,000 feet. Unique. My collection.

Thamiaraea inconspicua sp. n.

Moderately shining: head, thorax and abdomen black, elytra yellowish-brown. Antennae black, the first three segments and legs reddish-yellow. Length 3 mm.

Near *submontana* Cam., but of darker colour, antennae longer, the intermediate segments as long as broad, the penultimate scarcely transverse, 11th as long as the 9th and 10th together; head narrower, the punctures less fine and closer, the ground sculpture weaker; thorax less transverse, the punctures finer, the ground sculpture less distinct; elytra more finely punctured and with scarcely visible ground sculpture: abdomen with puncturation much as in *submontana* but with much less distinct ground sculpture.

♂: unknown.

DEHRA DUN. Unique. My collection.

Thamiaraea parvula sp. n.

Moderately shining, black, the elytra yellowish-brown, the posterior margins of the tergites narrowly rufescent. Antennae reddish, the first two or three segments and legs reddish-yellow. Length 2 mm.

The smallest Indian species. Head suborbicular, narrower than the thorax, the eyes rather large, very finely, rather sparingly punctured, finely coriaceous. Antennae short, the 4th segment as long as broad, the 5th to 10th gradually more transverse, the penultimate twice as broad as long, the 11th as long as the 9th and 10th together. Thorax trans-

verse (3·5 : 3), the sides rounded in front, straight and slightly retracted behind, the puncturation and ground sculpture as on the head. Elytra longer (3·75 : 3) and broader than the thorax, less finely, more closely, roughly punctured, the ground sculpture coriaceous. Abdomen very finely, sparingly punctured, the ground sculpture fine and transverse.

♂ : unknown.

SIMLA HILLS : Kotgarh. Unique. My collection.

Zyras (Glossacantha) deceptivus sp. n.

Very near *obscurus* F. but differing as follows. ♂ : head slightly impressed on the middle of the disc, shining and only feebly coriaceous like the rest of the surface; antennae less stout, the penultimate segments less transverse; thorax shorter, more transverse (4 : 3), much more finely punctured and with feeble ground sculpture; elytra more finely punctured and with a fine but distinct ground sculpture; abdomen more finely, much more sparingly punctured, practically impunctate behind; processes of the 3rd tergite much shorter, 7th with a fine sharp keel along the middle, the keel on the 8th less developed. In all other respects like *obscurus*. Length 6 mm.

DEHRA DUN. Unique. In my collection.

Zyras (s.str.) **indicus** sp. n.

Colour and lustre of *geminus* Kr. and similar in build except that the thorax is a little longer, as long as broad and also differs as follows : the antennae are shorter and stouter, the intermediate segments as long as broad, the penultimate transverse, only the first two and a half and the last two reddish-yellow; the sculpture of the head scarcely differs in the two species but the thorax is much more finely and much more sparingly punctured and without trace of a median ridge; the puncturation of the elytra is about as close as in *geminus* but finer and asperate; the 4th and 5th visible tergites are rather less punctured than in that species : the long stiff pubescence scarcely differs. Length 5·5 mm.

MYSORE : Anantapur (*E. A. Glennie*), 17.x.33. Unique. In my collection.

Zyras (s.str.) **nitens** sp. n.

Shining, the fore parts black, the elytra with the disc obscurely reddish; abdomen dark reddish-brown, the raised lateral margins yellow-reddish. Antennae reddish, the first three segments and the last reddish-yellow. Legs yellow. Length 5 mm.

Build of *geminus* Kr. but larger and differently coloured, the antennae longer and more slender. Head almost impunctate, the eye as long as the post-ocular region. Antennae with the 3rd segment a little longer than the 2nd, 4th to 9th all longer than broad, decreasing in length, 10th as long as broad, 11th as long as the 9th and 10th together. Thorax slightly transverse (3·5 : 3), the sides sinuately retracted behind, before the scutellum with a deep fossa, the punctures small, few in number and scattered; the sides with five long black setae. Elytra as long as but broader than the thorax, rather coarsely and rugosely punctured in the scutellary region, more finely and much less closely elsewhere, the sides with four long black setae. Abdomen a little narrowed at the base and apex, practically impunctate and with long black setae at the sides and apex. The whole insect without ground sculpture.

SELANGOR : The Gap. Unique. In my collection.

NEW SPECIES AND FORMS OF *TENARIS* (LEP. AMATHUSIIDAE)

By C. Joslin Brooks, F.R.I.C., F.R.E.S.

The numerous and important collections acquired by the British Museum (Natural History), in recent years, include many hundreds of specimens of *Tenaris*, which I have been privileged to study. A number of new species and forms occur among them, which I describe below. Unfortunately, the revisionary study of the genus has had to be postponed, although much work has been done; at the present time I am only able to place these new forms on record.

I have followed Stichel's arrangement of the species, as published in Wytsman's *Gen. Insect.*, Fasc. 36, Nymph. Amathusiinae, as this appears to be more systematic than that adopted by Fruhstorfer in Seitz, *Macrolep.* **9**. Full references can be obtained by consulting either of these works.

All the types of forms described below are in the British Museum (Natural History).

I desire to record my thanks to the Trustees of the British Museum for the opportunity to carry out this study, also to the members of the staff, and others who have kindly given me advice and assistance.

For conservation of space a few obvious abbreviations have been used in the descriptions, namely :—fw = fore-wing, hw = hind-wing, ups = upperside, uns = underside.

Tenaris horsfieldi Swainson.

Tenaris horsfieldi ab. **acosmeta** ab. nov. ♂. Without ocelli on the upper and underside of the hw.

Habitat.—Soekaboemi, Java (*G. Overdijkinkt*). Ex Joicey coll.

This example of the total absence of ocelli is unique throughout the genus; for this reason I consider it worthy of special mention. Further, *horsfieldi* is subject to very little variation, and only a few examples of the ocellar aberration *opulenta* Stichel are noticeable in the long series of the various races.

Tenaris onolaus Kirsch.

Fruhstorfer, in his review of this species (Seitz, *Macrolep.* **9** : 420), remarks that the type figured by Kirsch in his original description (1877, *Mitt. zool. Mus. Dresden.* **1** : 122 t. 6. f. 7) and taken on an island in Geelvink Bay, closely resembles *saturator*, from British New Guinea, but that specimens from the mainland on the west of Geelvink Bay differ in the shape of the border on the hw ups from Kirsch's figure. The long series of *onolaus* in the British Museum show that the shape of this border is very constant in each race. It is therefore possible that the mainland form does not represent *onolaus onolaus* Kirsch. As this question is somewhat involved I have reserved its discussion for another occasion.

On the mountains at the south of Geelvink Bay a fine form occurs, which I have distinguished as :—

Tenaris onolaus form **shapur** f. n. ♂. Fw ups dark greyish-black, a narrow white border on the inner margin. Uns as above. Hw ups outer marginal border grey-black, broad, extending with little reduction in width to the ocellus, where it terminates ; a black ocellus in a prominent orange area, wider than the border, extending inwardly with an irregular suffused margin, and not extending into the white anal area. Uns, a very dark border across the base and extending broadly on the anal fold, narrow on the costa, broad at the apex to include the ocellus, continued outwardly to below vein 3 to the deep orange-yellow area filling the lower third of the wing. Ocellus prominently black with white pupil.

♀. Like the ♂, but without the white border on the fw.

The features distinguishing this form are the large size, the dark colour, and extended deep orange area above and below.

Habitat.—Weyland and Wandamman Mts (Types, ♂ and ♀, Wandamman Mts) (*Pratt Bros.*), Nov. 1914, 7 ♂, 6 ♀.

The specimens from the Weyland Mts are rather smaller.

Tenaris macrops Felder.

Tenaris macrops sura subsp. n. ♂. Fw ups and uns as *macrops*. Hw ups as *macrops* ; uns broadly margined with brown, reducing the white area to a small patch in the discal area.

♀. Fw ups grey-brown, somewhat lighter internally, and nearly white on the inner and outer margins. Uns grey-brown on the costal margin, broadly at the apex, internally lighter. Hw ups wide grey-brown border from the apex to the ocellus, suffused inwardly, anal angle to the base white ; uns as the ♂.

Habitat.—Geisser Is., near Ceram, ex coll. H. Druce 1913, 1 ♂, 1 ♀.

Tenaris macrops ♀-form **psola** f. n. Among the females of both *macrops* and *macropina* specimens occur with the grey-brown margin of the fore-wing wide at the apex and suffusing inwardly on the veins nearly or quite to the cell ; in some specimens of *macrops* the wing is completely filled, the white area of the wing has a soiled appearance, otherwise they are normal.

Type, ♀, Moluques, Batjan, *W. Doherty*, août 1897 (in Oberthur coll.).

Tenaris elatus sp. n.

♂. Fw ups blackish-brown on the costal margin and apex to vein 4, filling the costal half of the cell, extending outwardly to vein 2, below which is a white area somewhat tinged with brown ; all veins darkly outlined, both in the dark and white areas. Uns as above, but the white area free from any tinge of colour. Hw ups, the costal area from the base to vein 5 greyish-brown, at the apex and outwardly broadly brown, extending to nearly the width of the yellow ring of the anal ocellus and around which it partly extends internally as a ring, broken on the anal side ; the band suddenly narrows below the ocellus, continuing as an edging to the tornus and anal fold. The black anal ocellus prominent with a white pupil and wide yellow ring. The brown scales below the hair streak on the anal fold are not prominent. Uns as above, but the costal band wider at the base. The black ocelli, with white pupil, large, that at the anal angle much larger than on the upperside, with narrower yellow ring.

♀. Fw ups, the black-brown costal band extending widely across the apex to below vein

3 outwardly, but not into cell, otherwise pure white. Uns as above, but the basal half of the cell filled with dark brown. Hw ups as the ♂, but the black ocellus smaller. Uns as in the ♂, but outer border extending irregularly beyond the anal ocellus, leaving it nearly free. The ocelli with well-defined yellow and brown rings.

Habitat.—Karkar, Dampier Is., Feb. 1914. Ex Joicey coll., 2 ♂, 1 ♀.

This is an interesting insect. The wing shape is that of *catops*; also the dark outlining of the veins and the extended white of the female indicate this species, but the prominent and well-developed ocelli, especially on the upperside, recall *macrops* and *phorcas*, with both of which there are resemblances, so that it is difficult to assign it to either of these species.

Tenaris catops Westwood.

Tenaris catops leanas subsp. n. ♂. Fw ups, the grey-black-brown band below the costal margin slightly enters the cell then continues below vein 7 to broadly fill the apex as far as vein 4; from the cell the veins 4, 5 and 6 are more or less outlined, with white spaces between. Uns, the costal band from the base following vein 6 broadening to fill the apex, tapering on the outer margin to below vein 4. Hw ups, the dark grey area at the apex broad, tapering on the outer margin to terminate at vein 3, the basal area yellow; uns, the costal band from the base extending inwardly to vein 7, broadly across the apex, to include the ocellus, then tapering to vein 3.

♀. As *westwoodi*, but with a yellow area at the base of the hind-wing.

Habitat.—Milne Bay, S.E. New Guinea. Type ♂ and ♀.

A distinct race which appears to have escaped notice. It approaches *westwoodi* but is at once distinguished by the yellow area at the base of the hind-wing, thus showing its relationship to the South Coast races.

Tenaris catops form **pellus** f. n. A few melanotic forms appear in both sexes, in the *kajuna* and *catops* series. The fw is normal, while the hw is very broadly dark, and on the uns the marginal band extends to the tornus enclosing the ocellus.

Type, ♂, Aru Is., Mar.–May 1916, *W. J. C. Frost.*

Tenaris rothschildi H. G. Smith.

Tenaris rothschildi form **laius** f. n. ♂. Fw ups, a narrow greyish-brown band on the costa, broadening across the apex, the band on the inner margin extending across the cell and not above vein 3. Uns, the white area prominent, the narrow grey band on the costa broadening at the apex, internally concave, continued somewhat outwardly; the band on the inner margin nearly filling the cell, not extending above vein 2. Hw ups grey-brown, extending from the outer margin to vein 2, below which the white area is limited by a narrow border on the anal fold. Uns, the brown area around the base extending on the costa, tapering to the ocellus, broad at the apex, tapering to the anal ocellus, below which it passes to terminate in a diffused area at the tornus; anal fold brown.

Habitat.—The coast from Geelvink Bay to Humboldt Bay, Dutch New Guinea, ♂.

This form is near *pelagia* Fruhst. but differs in the darker uns. To add another form to the large number already described is somewhat regrettable, especially as they are not very definite, but as this form does not agree with the others its description appears to be justified.

Tenaris chionides Godman & Salvin.

Tenaris chionides form **superarvana** f. n. Among the magnificent white forms of *chionides* from British New Guinea are two females from the Hydrographer Mts, 2500 ft. (*Eichhorn Bros.*), that are near the form *arvana* Fruhstorfer, but the band across the inner margin of the fw is deep grey-black reaching vein 3 and almost filling the cell. On the hw the marginal border at the apex is narrower than in *arvana* and tapers to terminate midway on the outer margin.

Type, ♀, Hydrographer Mts, Brit. N. Guinea, 2500 ft., Jan.–May, 1918.

Tenaris acontius sp. n.

♂. Fw ups, the yellowish-brown costal border not extending below the sub-costal, widening at the apex to vein 7, across the internal margin a wide greyish-black band extending to vein 3 and across the cell, leaving a pure white space between the borders. Uns, the costal band as above but widening at the apex to nearly reach vein 6, the grey-black band on the inner margin extending across the cell to beyond vein 2 outwardly, the veins in the white area clearly outlined. Hw ups, the greyish-black border on the inner margin suffused internally, widening at the apex to include the ocellus, faintly visible, extending on the outer margin to the width of the faintly visible anal ocellus below which it narrows to the tornus, continued narrowly on the fold to the base. Uns, a well-defined black-brown area on the costal margin following vein 7, widening at the apex to half the width of the ocellus, below which it rapidly narrows to a thin border extending to the base. Ocelli well developed with conspicuous white pupil and wide yellow ring.

♀. Fw ups, the grey-brown bands as in the ♂, but slightly more extended at the apex, and on the inner margin filling the cell. Uns as in the ♂. Hw ups, the grey-brown band as on the ♂, but only half the width; uns as in the ♂, but the colour greyish-brown, and the ocelli smaller.

Habitat.—Wangaar, S. Geelvink Bay, Dutch New Guinea (*C. F. & J. Pratt*). Ex Joicey coll., 2 ♂, 1 ♀ (including Types).

This species appears to be a form uniting *rothschildi* and *cyclops*, the dark greyish-black band across the fw not filling the cell indicates the former, while the wing shape is that of *cyclops*. The dark scales below the anal hair streak are not prominent as they are in *rothschildi* but resemble the reduced form of *cyclops*. The dark scales on the gland at the costa are present.

Tenaris acontius form **theon** f. n. ♂. Fw ups similar to *acontius*, the narrow faintly yellowish costal band widening at the apex to reach vein 6 on the outer margin, the band across the inner margin nearly filling the cell and extending outwardly to beyond vein 3, the inner space being a soiled white on which the veins are indicated. Uns, the white area much reduced and only showing as white streaks between the prominently outlined veins 3, 4, 5 and 6, not extending to the outer margin, and not more than the width of the cell towards the costa. Hw ups, as *acontius*, but the white area suffused with grey; uns as *acontius*, but the dark area at the base more extended.

Habitat.—Uty Riv., North New Guinea (*Pratt Bros.*). Ex Joicey coll., 1 ♂ (Type).

The locality data of this specimen are as given above, but I have been unable to trace a "Uty River," unless it is the R. Uta in S.W. Dutch New Guinea. A male from the Weyland Mts resembles *theon*; it is much smaller and also an unusual aberration, probably due to some injury received during the pupal stage.

Tenaris myops Felder.

Tenaris myops fergussonia form **crus** f. n. ♂. Fw ups, the normal white area is absent, but is indicated by a somewhat lighter grey-brown between the veins. Hw ups from vein 2 outwardly grey-brown, deepening towards the margin, between vein 2 and the anal margin white. Uns as *fergussonia*.

Habitat.—Fergusson Island, 2 ♂.

Tenaris mailua H. G. Smith.

Tenaris mailua dionus subsp. n. ♀. Fw ups similar to *mailua*, but the white area wider, and the apex not extending so far outwardly; marginal borders dark grey. Uns as above. Hw ups, the dark grey costal and outer margin extending to the tornus nearly as wide as the ocellus, continued to the base as a narrow edging, from the base to the tornus between vein 2 and the anal margin tinted yellow; the ocellus as a black iris with indications of a suffused yellow ring, but variable, it may have a wide yellow surround or be little more than a black spot in a yellow area; uns costal border wide at the base, tapering to edge before the ocellus, then continuing to the base as above, between vein 2 and the anal margin prominently yellow. The apical ocellus complete with a broad brown ring, while that at the anal angle has a wide orange ring partly enclosed outwardly by a brown margin, and on the inner side may or may not suffuse into the yellow area. The specimens are smaller than *mailua*.

Habitat.—Ekeikei, British New Guinea, 1000 ft., 4 ♀ (the ♂ is unknown).

Tenaris artemis Vollenhoven.

Tenaris artemis pedius subsp. n. ♂. Fw both above and below similar to *artemis*, but a distinctly greyer brown. Hw ups from vein 2 outwardly filled with grey-brown, lighter above the median, darkening towards the border, continued from vein 2 as a narrow edging to the base leaving a greyish-white area extending down the anal fold; below the base a streak of light yellow hairs. Anal ocellus of medium size with yellow and brown rings; from some specimens the ocellus is absent. Uns, the costal band broad from the base to the ocellus, dark brown, continued outwardly to the anal angle, about half the width of the ocellus, suffused inwardly, leaving a brownish-white area with a yellow tinged zone below the base. Ocelli fully developed.

♀. Fw ups similar to the ♂, more greyish-brown than *artemis* and with narrower white area. Uns, the white area more extended than above, also the dark markings lighter and with a reddish tinge. Hw ups similar to the ♂; uns, the costal band tapering from the base to nearly terminate before the ocellus and somewhat diffused, the outer border dark on the margin suffused internally to less than half the width of the ocellus, continued as a narrow edging from the tornus to the base, containing a reddish-white area; slightly yellow below the base. Ocelli as the ♂.

Tenaris artemis pedius ♀-form **helice** f. n. Fw ups, the white area restricted, not reaching the outer margin; uns as above. Hw ups filled with dark brown, somewhat lighter in the disc, a dusky white zone above the anal fold; uns, the costal band expands around the base, suffused outwardly, the outer border more sharply defined than on the ♂, and the discal area white. The anal ocellus appears on the ups as a dark pupil with indication of a yellow ring; below, both ocelli are well developed.

Habitat.—Gebi Island (*Waterstradt*), 1903. Ex coll. Oberthur, 20 ♂, 6 ♀.

In the series no male occurs agreeing with this female, but a second ♀-form also appears among other races of *artemis* from the west, although not recognised as such. Fruhstorfer describes *timesides* and *elusina* under *grisela* and

artemis, respectively, without stating the sex; these are well represented in the British Museum series with no corresponding males. The characteristic which distinguishes the second form from what may be considered the normal is the shape of the costal border on the hw uns. In the normal form this passes to the base of the wing, where it terminates without expanding. On the ups there is generally a streak of yellow below the base. The second form has the band expanded round the base extending into the wing and prolonged on the anal margin; above there is no yellow below the base.

T. a. staudingeri Honrath. The type of this subspecies was assumed to be represented by a female in the Adams collection which was figured. I have now been able to establish the male type, which I found among Honrath's specimens in this collection; it bears a small label "*staudingeri*", and had apparently been overlooked.

T. a. onesimus Butler (= *sticheli* Fruhstorfer). When examining the types of *dioptrica* it was found that *onesimus* does not belong to this species, but to *artemis* subsp. *sticheli*, with priority of description (Butler, *Proc. zool. Soc.* **1877 :** 468 : Fruhstorfer, 1901, *Ins-Borse.* **18 :** 375). Fruhstorfer states in his review of *dioptrica* (*Macrolep.* **9 :** 422) that the form is somewhat doubtful, also the country of origin. This is incorrect. Although the type is somewhat rubbed the relationship is clearly indicated, and it bears a label "Port Moresby. McFarlane."

Tenaris artemis zetes subsp. n. ♂. Fw ups narrowly light grey-brown along the costa expanding across the apex to vein 7, at the base below the cell pale yellow, from vein 3 to the tornus a suffused light brown, darker outwardly, the white area somewhat dusky. Uns costal margin and apex as above, but dark brown, lower half of the cell and across the wing, below vein 3, lightly suffused brown. Hw ups, the outer third suffused grey-brown, darkening towards the margin and terminating at the ocellus, darkly edged from the tornus to the base, yellow below the base, and between veins 1 and 2 with buff hairs, the anal ocellus prominent with dull yellow ring; uns, dark brown costal band narrowly to the ocellus, continued outwardly tapering to the anal ocellus and nearly as wide as the ocellus at the apex, suffused inwardly, then continued as a brown edging to the base; the lower ocellus stands free on the white ground, a yellow suffusion below the base, ocelli well developed.

♀. As the ♂, but lighter below.

Habitat.—Murry Is., Gulf of Papua, 1 ♂ and ♀.

Approaches *jamesi*, but with differences worthy of recognition.

T. a. intermedians Hulstaert (= ♂ *T. meeki* Rothschild). Lord Rothschild's description of *meeki* (1916, *Nov. Zool.* **23 :** 305, Pl. 2 f. 3, 7) is accompanied by the illustrations of both sexes. Four males from the Snow Mts, Otakwa R., which the British Museum possesses, are undoubtedly this insect; also they agree with Hulstaert's description of *intermedians* from Torai (1925, *Ann. Mag. nat. Hist.* (9) **15 :** 444). In the absence of the type of the latter they must be accepted as this insect and take priority of *meeki*. Although Rothschild separates them from *artemis*, on somewhat slender differences, there can be no question but that they represent the form of this species occurring in the mid-south. Associated with the males are two females, also from Otakwa, which undoubtedly represent the opposite sex, and agree with the description of the female of *intermedians*, but are quite different from the illustration of the female *meeki*, which appears to belong to another species. The darker border of the hw uns is unlike *artemis* and characteristic of *dioptrica* and *hypobolus*, but as neither of these species has the yellow basal area and prominent ocellus, it may be assumed that its male is still unknown, or that it is a second ♀-form.

Tenaris madu sp. n.

♂. Fw ups light brown on the costa to vein 7, extending into the cell, expanding to fill the apex with black-brown, continued outwardly tapering to vein 3 where it joins the inner marginal band extending across the wing and filling the lower half of the cell; below the base and for about half the length of the wing as far as vein 1 light brown, on some specimens almost white. The white area below the apex rounded, the veins intruding with a suffused outline; uns as above but somewhat darker. Hw ups, the costal and outer marginal band broadly greyish-brown to the width of the ocellus, suffused inwardly, continued narrowly from below the ocellus to the base, a yellow area below the median, anal and secondary hair streaks fulvous. The anal ocellus with yellow and brown rings. Uns, the costal band prominent and darker than above, tapering somewhat to the ocellus, continued outwardly, wide at the ocelli but about half their width between them, from the tornus to the base as a dark edging. Ocelli prominent, with full yellow and brown rings.

♀. Fw ups and uns as the ♂, but no light area on the inner margin. Hw ups as the ♂, but the marginal border more sharply defined inwardly; uns, a light suffusion at the tornus and narrow edging to the base, otherwise as the ♂.

Habitat.—Biak, Schouten Is., North New Guinea, June 1914 (*A. C. & F. Pratt*), 15 ♂, 8 ♀.

In the absence of black scales under the hair streak on the anal fold of the hw, this species appears to be allied to *artemis*.

The scales on the costal gland on the hw are light, but when viewed obliquely the deep gland casts a shadow, giving the appearance of being black.

The anal ocellus on both sexes varies in size, and the species appears to be very subject to ocellar aberrations, varying from *lacrimans* to *prodiga*.

It is named in memory of a small Krokong dyak, who, from his exceptional intelligence, ability to meet emergencies, and knowledge of the jungle, was selected to accompany me on numerous jungle excursions, and also by Messrs. Hewitt and Moulton, late Curators of the Sarawak Museum, when on similar expeditions.

Tenaris dimona Hewitson.

Throughout the subspecies of *dimona* a double or single anal ocellus is of common occurrence. This duplication is the only distinction between *dimona* and *desdemona* Staudinger, hence the latter name can only be regarded as a synonym, or used to distinguish the form with a single ocellus. That Hewitson's type originated from Ceram and was taken by Wallace is proved by the small circular label he used, attached to the pin, and marked " E. Ceram ". Hewitson's error, in his description, in attributing the specimen to Aru, is probably the reason for the Aru race being still nameless.

Tenaris dimona aruensis subsp. n. ♂. Fw ups and uns similar to *dimona*. Hw ups, the dark border at the tornus not extending into the wing beyond the black of the underside ocellus when viewed by transmitted light, the anal ocellus indicated by a somewhat dark zone, scattered blue scales and lighter pupil, the second ocellus faintly indicated. Uns, both apical and anal ocelli fully developed, the brown ring of the anal ocellus extending to the tornus and continuing narrowly to the base where it expands slightly, the space between the apical and lower ocelli filled with lightly suffused brown, darkening on the margin, a prominent orange area between vein 2 and the anal fold.

♀. Fw ups dull grey-brown filling the basal half of the cell, continued on the costal margin, extending across the apex, and outwardly to the tornus, diffused inwardly. Uns as above but not on the outer margin after vein 4. Hw ups, grey-brown margin from the

apex to the tornus, as wide as the ocelli, tapering at the anal angle to a narrow margin to the base, faded yellow below the base, the anal ocellus only indicated by a dark zone with an inconspicuous white centre. Uns as the ♂.

♂ type, Aru Is., Ureinning (*C. Ribbe*), 1884. ♀ type, Aru Is. (*Wallace*), 6 ♂, 2 ♀.

These specimens are smaller than *dimona*, which race also occurs on the Aru Islands.

Tenaris dimona didorus subsp. n. Resembles *affaka*, but on the fw the costal band above and below is more extended and less defined internally, the white area of both wings is less than in *kapura*. The very large ocelli on the uns distinguish this race from the other subspecies.

Habitat.—Mysol, Oct.–Nov. 1916, wet season, foothills 100–500 ft., *W. J. C. Frost*, 6 ♂, 2 ♀, including Types.

Tenaris gorgo Kirsch.

Tenaris gorgo lucina subsp. n. ♀. Fw ups white, a narrow black costal band broadening to cover the apex, but not deeply. Uns as above. Hw ups, the costal margin and outwardly black, rapidly suffusing inwardly to cover about half the wing, leaving a white to yellow area in the disc, light yellow hairs below the base. Uns, costal border narrow, tapering to nearly terminate at the apical ocellus, from the apex outwardly a narrow black marginal band, lightly suffused internally, continuing from the tornus to the base as a black edging, an orange-yellow streak below the base. The ocelli small, complete.

Habitat.—Otakwa R., Snow Mts, New Guinea, 3500 ft. (*Meek*), 2 ♀.

Tenaris gorgo thyia subsp. n. ♀. Fw ups as in *lucina*, but the dark apex wider, also below. Hw ups, the outer border narrow and less suffused, not extending to the base. Uns very narrow black edging, otherwise as *lucina*.

Habitat.—Aroa River, New Guinea, ♂♀.

The difference between these two forms is slight, but as is shown by the two specimens from each locality, together with the great distance which intervenes, it seems probable that they are different races, a view that can only be substantiated when the males are discovered.

NEW SPECIES OF ETHIOPIAN *SIMULIUM* (DIPTERA)

By Botha de Meillon, F.R.E.S.

The South African Institute for Medical Research, Johannesburg.

The species described below were collected by Mr. J. J. C. Buckley in the Lumbwa district of Kenya. The types of the species are in the collection of the South African Institute for Medical Research, Johannesburg.

Simulium lumbwanus sp. n.

Female. A medium to large insect; black except for golden brassy pubescence on the mesonotum laterally and on the basal segments of the abdomen. *Head:* vertex with golden pubescence, clypeus apparently dark but rubbed in most specimens. *Mesonotum:* with a very broad median band of black pubescence bordered on each side by a lateral band of dense golden scales. This ornamentation is very striking and visible from all angles in all lights. Pleurae black with greyish reflections in some lights; no post-spiracular scales. *Wings:* length 3 mm.; base of radius and subcosta provided with setae; patch of hairs at the base of the radius jet black. Halteres with strikingly reddish-yellow crowns. *Legs:* jet black unrelieved by any pale pubescence; claws toothed. *Abdomen:* largely black; dorsally segment I with an apical fringe of golden scales, laterally with longish dark hairs; II densely and evenly clothed with golden scales; III and IV dorsally black, laterally with rather scattered yellowish scales; V, VI and VII shiny black dorsally, laterally as in III and IV. The golden scaling on segment II contrasts very vividly with the otherwise black abdomen when viewed dorsally.

This description is a composite one made from over 40 females taken in a light trap and two taken biting. They are all somewhat rubbed.

Male. Like the female; mesonotum with golden scales laterally, on the shoulders and prescutellar area; the median black scaled area therefore not in the form of a well-defined band as in the female. Segments V and VI of the abdomen with a silvery patch laterally; segment II as in the female; terminal segments shiny. *Terminalia* (fig. 1, *a*, *b*, *c*): side pieces rather narrow in ventral view, broadly expanded basally; claspers short, broad basally with apex suddenly narrowed to a point bearing a single tooth, somewhat as in *adersi* Pomeroy. Aedeagus broad in ventral view, each lateral apical corner produced leaving a median notch in which the median keel is visible. Side view of aedeagus as in the figure. Parameral hook consists of a single strip of chitin.

Pupa. Unknown.

In external ornamentation this species is very easily distinguished from all other Ethiopian Simuliidae. It belongs to a large group of species in which the abdominal pubescence is more concentrated basally, the claws toothed and the post-spiracular area bare. It differs from all the members of this group in the uniformly dark legs and the striking ornamentation of the mesonotum. The male terminalia resemble those of *adersi* Pom. in some respects but specific differences are obvious if not easily described.

Type: male, trapped Kipsonoi River, Ngoina, 8.ii.43; 41 females trapped same locality October 1942 and two caught biting, Yala River, Kaimosi, May 1943.

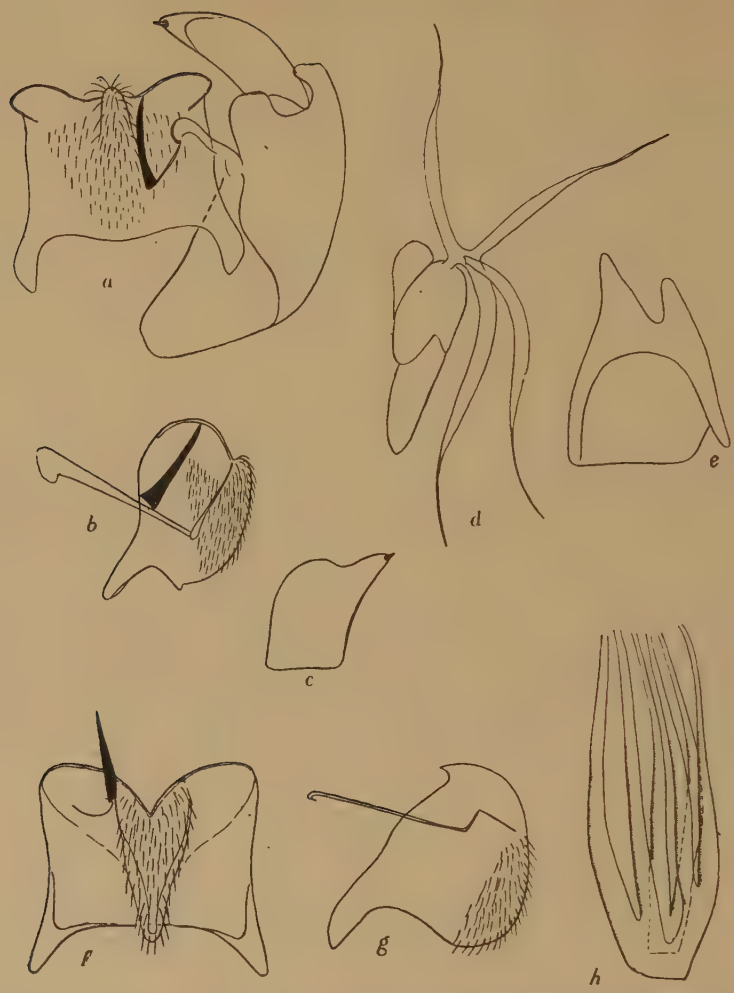

FIG. 1, *a–h.—Simulium lumbwanus* sp. n., *a*, aedeagus, side piece and clasper in ventral view; *b*, aedeagus in side view; *c*, clasper. *Simulium buckleyi* sp. n., *d*, pupa and respiratory organ; *e*, internal view of the side piece; *f*, ventral view of the aedeagus; *g*, side view of the aedeagus. *Simulium hirsutum* var. *sexiens* var. n.; *h*, base of the respiratory organ of the pupa.

Simulium buckleyi sp. n.

Female. A medium-sized species with pale golden pubescence and legs generally resembling those of *nigritarsis* Coq. *Head:* vertex and clypeus with pale golden pubescence. *Mesonotum:* uniformly and densely clothed with pale golden scales, no silvery ones evident; scutellum similar and in addition some long yellow hairs; sternopleuron dark with the usual greyish reflections in some lights, rest of pleura mainly violet; no post-spiracular scales. *Wings:* base of the radius hairy and patch of hairs at the base largely pale;

halteres pale yellow. *Legs:* all tarsi jet black: femora with approximately apical third or less black, rest lemon yellow with yellowish scaling; tibiae with approximately basal halves yellow with pale scaling, rest black with dark scaling. Claws toothed. *Abdomen:* dorsally evenly and densely clothed with yellowish scales.

Male. Much darker than female. Mesonotal scaling more brassy. Legs with the pale areas much reduced; 1st hind tarsus greatly enlarged. Abdomen evenly and densely clothed with rather darker scales than in female. Long hairs of the 1st abdominal segment dark. *Terminalia* (fig. 1, *d*, *e*, *f*, *g*): side pieces rather short, broad basally in internal view; claspers short, gradually tapering, with a single terminal spine; aedeagus broad in ventral view, deeply notched apically; side view as in illustration. Parameral hook of a single long pointed tooth.

Pupa. Respiratory organ of four large sharply pointed filaments, all of these longer than the pupa itself. The nature of the branching and shape of the filaments is best appreciated from the illustration.

Type: male, Chemagel River, Ngoina, August 1941. 3 ♀, 2 ♂ same locality and date, also 2 ♂ Chagaror River, Ngoina, November 1941. All these with their associated pelts.

The female belongs to a small group of species which have toothed claws, the post-spiracular area bare and the abdomen densely and evenly clothed with pale scales. Of this group it resembles *nigritarsis* Coq. most closely, differing only externally in the absence of silvery pubescence from the mesonotum. The male terminalia and pupal respiratory organ are unique and quite unlike those of any other known Ethiopian *Simulium*.

Simulium hirsutum var. **sexiens** var. n.

This variety differs from *hirsutum* Pomeroy only in the number of branches of the pupal respiratory organ (fig. 1, *h*). In var. *sexiens* the filaments are six in number; all arise more or less from a common base and there is no secondary branching. The outer wall is provided with small nodules as in *hirsutum*.

The male terminalia and other characters agree with those of *hirsutum*.

Type: pupal pelt, Kipboga River, Ngoina, November 1941. The male which hatched from this pelt together with several other adults and their associated pelts from the same locality and date.

SOME PARASITIC BEES FROM CYPRUS (HYMENOPTERA, APOIDEA)

By Vladimir B. Popov.

The following Cyprus bees were collected and kindly sent to me by Mr. G. A. Mavromoustakis, Limassol, Cyprus. The types of the new species are in the collection of the Zoological Institute, Academy of Sciences, Leningrad, and the paratypes in Mr. Mavromoustakis' own collection.

Stelis (*Protostelis*) *signata eremica* Alfken.

Alfken, 1938, *Deutsch. ent. Z.* **1938**: 430, ♀.

Limassol, 23.vi.30 (1 ♀), 7.vii.28 (1 ♂), 17.vii.28 (1 ♀), 18.vii.27 (1 ♀, at *Statice*), vii.35 (1 ♀, 1 ♂), 6.viii.24 (1 ♀, at *Statice*), 24.viii.38 (1 ♂), 2.ix.27 (1 ♀), 5.ix.27 (1 ♂), 10.ix.38 (1 ♂), 11.ix.38 (2 ♂), 12.ix.38 (2 ♂), 13.ix.38 (1 ♂), 24.ix.38 (1 ♀); Para Pedi, 27.v.29 (1 ♂), 16.viii.37 (2 ♂); Phinikaria, 29.iv.25 (2 ♂, at *Rubus*); Platres, 3500 ft., vi.37 (1 ♂); Stavronini, 2000 ft., v.37 (1 ♂).

♂. Length 5–6·5 mm. Like the female, except: as a rule, narrow yellow band on vertex strongly reduced; vertex entirely dark; upper margin of tergite II largely black as in tergite I; yellow bands of tergites I and II sometimes broadly interrupted; tergite VI with two large yellow spots; sometimes these spots joined together, or tergite VI entirely dark; tergite VII black or with yellow or yellowish apical margin.

Cyprus females agreed well with Alfken's description, and their identification is in no doubt; but some of the characters mentioned by Alfken as separating his race from subsp. *flavescens* Friese, are distinctly variable. The lateral yellow stripe on mesothorax may be small and rounded (1 ♀); sometimes tergite VI (2 ♀) and mandibles (1 ♀) have no yellow spots; sternites and hind half of tegulae of all Cyprus females dark brown, and the body size appears to be rather large, 5·5–6·5 mm.

The male of subsp. *eremica* Alfken appears to be darker than the female. This fact is of certain interest because the male of the typical form is paler than the female; the sexes of subsp. *flavescens* Friese have no great difference in colour. It has already been noted by Reinig (1935), that in humble bees the male retains the primitive coloration of the species, while the female tends to accept at first the new coloration. From this point of view the process of colour variation in *S. signata* Latr. and its subsp. *eremica* Alfken is quite different; subsp. *eremica* Alfken seems to be younger than the typical race. The geographical range of the last form lies northwards to the range of subsp. *flavescens* Friese; the extremely light colour of subsp. *eremica* Alfken may be connected with its geographical range, situated southwards from the range of subsp. *flavescens* Friese; the former seems to be rather younger than the latter.

Alfken considers subsp. *eremica* Alfken to be a probable parasite of *Anthidiellum strigatum humerale* Alfken, a race occurring in both Palestine and Cyprus; host's size (6 mm.) corresponds well with that of parasite, especially of Cyprus specimens. *A. strigatum humerale* Alfken is also the palest form of the species (Alfken 1936).

Stelis (*Stelis*) *phaeoptera meridionalis* Popov.

Limassol, 6.v.31 (1 ♀); Episcopi, 6 and 7.v.31 (1 ♀, 4 ♂, at *Marrubium*).

The Cyprus female similar and the male quite similar to the type specimens of subsp. *meridionalis* Popov. Cyprus females smaller; punctures of mesonotum sparser; distances between punctures equal to three-quarters of their diameter (those of subsp. *meridionalis* Popov nearly equal to a half of their diameters); apical margin of clypeus strongly emarginated; punctures of abdominal tergites smaller and sparser; distances between punctures equal about two of their diameters (in subsp. *meridionalis* Popov—only to one diameter); tergite VI regularly covered with small punctures; distances between punctures slightly shagreened and nearly equal to one of their diameters, and only laterally some of punctures joined together.

Among the specimens from Caucasus I have seen some females corresponding exactly to Cyprus ones; perhaps these specimens belong to another form slightly differentiated morphologically, but parasitising a different host species.

Dioxys cincta (Jur.).

Limassol, 20.iii.30 (2 ♀, 1 ♂), v.35 (1 ♀); Ayia Phyla, 24.iii.35 (2 ♂); north of Ayia Phyla, 24.iii.38 (1 ♂); Polemidia, 5.iv.35 (2 ♂).

H. Friese (1895) and J. Popov (1936) noted a great variation of the species in size, colour, puncturation of the body, and position of the second transverse cubital vein. Cyprus specimens varied greatly in size and colour; length of the females 5·5–8·0 mm. and that of the males—6·5–8·0 mm.; female tergite II nearly all black or marked with a large black spot medially; tergite I with a large black spot, sometimes this spot gradually enlarged laterally, band-like; one male with tergites I and II and partially III red; abdomen of another male entirely black and only tergite I with small lateral dark brown spots (ab. *friederikae* Mader.).

Dioxys cypriaca sp. n.

Limassol, v.1935 (6 ♀, 8 ♂); iv.1936 (1 ♀, 1 ♂).

♀. Length 6–7·5 mm. Head as broad as the thorax; clypeus large, moderately convex, about half as long as broad with rather straight apical margin; scape of antennae short, not reaching the median ocellus; second joint of flagellum nearly as long as their width at apex; third and fourth joints very wide, nearly three times as wide as long; fifth rather short, nearly as broad as three-quarters of their length; sixth to eleventh nearly quadrate; twelfth rounded, about one and a half times as long as broad; ocelli rather raised, ratio of the distance from the outer margin of lateral ocellus to the distance from the latter to the nearest point of the eye being 3 : 4; eyes rather broad, kidney-shaped, distinctly enlarged towards the base of mandibles; tempora rather narrow, about as broad as a half of median width of the eye; scutellum rounded, about two and a half times as broad as long, with two rather large, flat and triangular teeth laterally; postscutellum with short median tooth; tergite VI widely ellipsoidal, without lateral angles; sternite VI slightly longer.

Moderately shining; body covered with closely-set, large and flat punctures; punctures of clypeus somewhat smaller; first and second pairs of legs and tarsi of the third pair covered with small punctures, slightly shagreened.

Black; mandibles dark reddish; antennae, tegulae and abdomen red; flagellum of antennae and sometimes tergites V and VI dark red; wing veins pale reddish.

Hairs all white, narrowly squamiform, short and rather dense; hairs of face, vertex, dorsum and tergite I pale-ochraceous; tergites I–V with narrow apical bands of white short hairs.

♂. Length 6–7·5 mm. Similar to the female, except: clypeus distinctly convex, its apical margin largely rounded; abdomen oval, moderately elongated, slightly flattened; tergite VI very broad, rounded; sternite IV with rounded apical emargination medially; sternite VI with moderately projecting rectangular lateral lobes and deep oval median impression; sternites VII and VIII as in *D. rufipes* F. Mor.

Slightly shining; puncturation of body rather slender; apical margin of clypeus and apical margins of tergites unpunctured, shining.

Black; mandibles, antennae, tegulae and wing veins dark brown; abdomen red; segments V and VI dark; apical margins of tergites I–VI pale yellowish; calcaria and tarsi dark reddish, metatarsi sometimes black.

Hairs all white, rather short and sparse; hairs of notum pale golden; hairs of apical bands on tergites I–VI very narrow and sparse.

Differs from *D. modesta* Popov (Usbekistan), which it resembles in structure of the female abdominal segment VI, in coarse and equal punctures of the tergite VI, pale colour of abdomen and legs, and apical bands of abdominal tergites.

Rather similar to *D. limbifera* J. Pér., which occurs in N.W. Africa and was recently found in Palestine (Alfken 1938); the female may be easily distinguished by the large tergite V with nearly blunt apical margin, by the apical band of tergite V and pale reddish colour of abdomen, with sternites always pale and tergites V and VI sometimes dark brown.

The structure of male genitalia and sternites VII and VIII of *D. cypriaca* sp. n. are rather similar to those of *D. rufipes* F. Mor. from Usbekistan (Popov 1936, fig. 4), but differs as follows: dorsal half of basal ring strongly emarginated laterally; basal lobes of sagittae with lateral processes; apical half of sagittae large, its tooth lying nearly one-third towards the inner lateral margin; the species may be separated also by the colour of the abdomen and the puncturation of the thorax, as well as by the size of the body.

Pasites maculatus aschabadensis (Rad.).

Limassol, 23.vi.25 (1 ♀), 25.vi.25 (2 ♀), vi.30 (2 ♀, 1 ♂), 13.ix.38 (1 ♂).

The Cyprus specimens are quite similar to those from Middle Asia; females large, 7–9 mm., pale reddish; males smaller, 5–6·5 mm., darker.

It was previously noted (Popov 1932; Popov and Yasumatsu 1935) that var. *brunneus* Friese from Tangier is probably a synonym of subsp. *aschabadensis* Rad.; the ranges of the two forms are widely separated, but the Cyprus specimens now form an intermediate link. Cockerell (1910) mentioned the typical form from Cyprus, and Alfken (1935) noted var. *brunneus* Friese from North Iran; these specimens undoubtedly belong to subsp. *aschabadensis* Rad.

Ammobates mavromoustakisi sp. n.

Limassol, vi.31 (6 ♀); 25.vi.25 (1 ♂); Ayios Athanasios, 19.vi.24 (2 ♂); Cherkes, vii.35 (2 ♀, 2 ♂).

♀. Length 6–7·5 mm., but one specimen reaches 9 mm. Head slightly broader than long; clypeus twice as broad as long, strongly prominent apically, about as long as a half of scape of antennae; upper lip nearly three times longer than broad, slightly narrowed towards the broad apex; maxillary palpi short and broad, 4-jointed; antennae massive and long, reaching scutellum; scape rather short and straight; second joint of flagellum nearly one and a half longer than its width at apex; third as long as broad; fourth to tenth distinctly longer than broad; apical joint twice as long as broad; scutellum broad, nearly flat, with small median impression at its apical half; postscutellum with small but

distinct median elevation; tergite VI trapezoidal, broad, apically as broad as its length, lying obliquely dorso-ventrally; sternite V nearly twice as broad as long and prominent towards the apex of tergite VI, with blunt apical margin and delicate indistinct median keel, which is as long as two-thirds of tergite length; apical lobes of sternite VI large and massive, with acute apex; median interlobal emargination small, triangular.

Slightly shining; clypeus, legs (partially) and metapleura covered with small and dense punctures; nearly dull; upper lip covered with rather large and coarse punctures, more numerous on basal half, indistinctly longitudinally rugose; head and thorax covered with large closely-set punctures which sometimes join together; distances between punctures equal from about a quarter to one-half of their diameter; punctures of abdominal tergites I–V small and dense; these punctures distinctly smaller on apical halves of tergites, distance between them being equal to from one-half to two-thirds of their diameter; tergite VI shining with rather large and closely-set punctures.

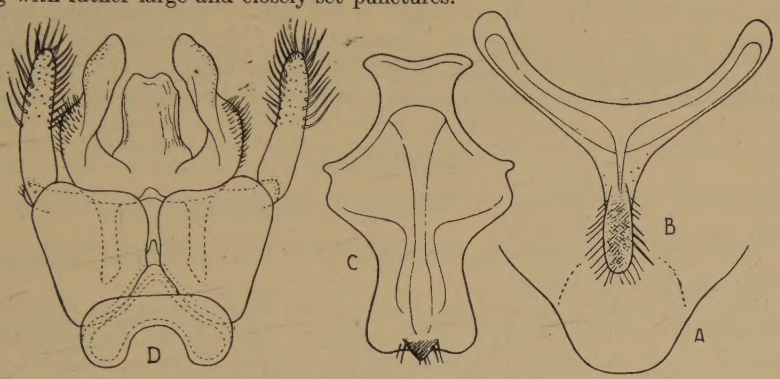

FIG. 1.—*Ammobates mavromoustakisi* sp. n. ♂. Dorsal view of tergite VII (A), sternites VII (B) and VIII (C) and genitalia (D).

Black; upper lip and mandibles dark red; antennae, tegulae, calli, humerales, legs and abdomen red.

Hairs all pale golden-yellow, short; hairs on face, tempora, vertex, propleura and median segment very dense; basal half and lateral sides of tergite I covered with very dense and short white hairs; tergites II–IV with lateral patches of white dense hairs, gradually enlarged towards the apex of abdomen, and on tergite VI separated to a quarter of tergite width; apical band of tergite V entire, hairs short, white; hairs of tergite VI long, erect, very dense apically; hairs of legs short, rather dense on coxae, outer sides of hind tibiae and first joint of tarsi.

♂. Length 6–7·5 mm. Like the female. Third joint of antennal flagellum distinctly shorter than long; fourth to eighth as long as broad; ninth to eleventh distinctly longer than broad; twelfth about twice as long as broad; tergite VI (fig. 1, A) rather small, rounded and distinctly prominent apically; sternites VII and VIII and genitalia as in fig. 1, B, C, D respectively.

Slightly shining; body puncturation distinctly sparser; on mesothorax distance between punctures equal one-half of their diameter; on abdominal tergites puncture distances equal to one or more of the diameter of punctures; tergite VI with rather large, closely-set punctures.

Black; the following are reddish: upper lip, mandibles, antennae beneath, tegulae, tibiae of the first and the second pairs of legs and all tarsi; abdomen dark, and only segments I and II dark red; sometimes tegulae black, upper lip and tarsi pale reddish, tergites I–III pale reddish and those following all somewhat darker; apical margin of tergites yellowish.

Hairs of head, thorax, and legs rather denser; basal half and sides of tergite I covered with very dense and short white hairs; antero-lateral patches of tergites II–V larger, gradually enlarged, and on tergite V the patches separated by a very narrow median space; apical band of tergite VI entire.

The species belongs to the group of *A. nigrinus* F. Mor.; the group includes rather numerous species from Caucasus and Middle Asia; descriptions of some of these species are still unpublished; *A. mavromoustakisi* sp. n. differs from all others known to the author by such characters, as colour and puncturation, and mainly by the form of sternites VII and VIII and the male genitalia; basal part of sternite VII extremely large, bearing very strong muscles, and apical half of sternite without lateral spinous spaces.

A. mavromoustakisi sp. n. varies in length and colour; specimens from Cherkes very small (♂♂—6·0 mm., ♀♀—6–6·5 mm.); a female from Limassol very large (9·0 mm.); males from Limassol and Ayios Athanasios larger and darker. It seems that there are no intermediates between the two types in colour and size, which may be due to the parasitism of two different host-species.

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